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EXAMINER	
SLAWSKI, BRIAN R	

ART UNIT	PAPER NUMBER
1791	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ADIPFDD@bipc.com

Office Action Summary	Application No.	Applicant(s)	
	10/560,180	BOLOGNESE, LITTERIO	
	Examiner	Art Unit	
	BRIAN R. SLAWSKI	1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _23 July 2008_.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _17-36_ is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _17-36_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _23 July 2008_.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

PROCESS FOR THE PRODUCTION OF A CURVED LAMINATED GLASS PANE

Detailed Action

1. Applicant's request for reconsideration filed on July 23, 2008, was received.

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in the prior Office Action issued on January 23, 2008.

Claim Objections

3. Claim 17 is objected to because of the following informalities: Claim 17 recites "the two glass glazings" in line 9, where these elements are only referred to as "a first glass sheet and a second corresponding glass sheet," rather than as "glazings" earlier in the claim. The claim should refer to these elements with consistent terminology. Appropriate correction is required.

Claim Rejections—35 USC §112

4. Claim 17 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Specifically, claim 17 recites "...before the thermoforming step, said at least one bioriented thermoplastic functional layer and at least one layer of a bonding resin are heated and, during such heating, a hot air jet is injected from the bottom so as to effect

a pretensioning of said at least one functional layer…." It is unclear from Applicant's disclosure how this pretensioning is effected.

Fig. 003 and paragraphs [036-038] and [044] of the instant specification teach that the interlayer 3 (comprising at least a functional layer 5 and a bonding resin layer 4) is first inserted between, fastened to, and assumes the shape of two curved mouldings 12, 13, and is then heated, e.g., by radiant heaters, in this condition. However, paragraphs [041] and [042] teach that the same heating step preferably includes injecting a hot air jet "from the bottom so as to effect a film pretensioning prior to positioning them on the mould," and that only after this step is the interlayer 3, already "held stationary by the two mouldings 12, 13," pressed against the curved mould 14 to assume its shape, even though the interlayer 3 is depicted and previously described as already being curved to the shape of the mould 14 by the mouldings 12, 13.

Applicant should explain whether the claimed "pretensioning" of the interlayer refers to its stretching to assume a curved shape or is merely a direct result of the heating itself. In the former case, it appears that the pretensioning by assuming a curved shape occurs before heating and thus is not a result of injecting a hot air jet, as claimed. Moreover, if the interlayer 3 is indeed already fastened to and "blocked between the mouldings 12, 13" before being heated (paragraphs [037, 038]), then it is unclear how the radiant heating of the interlayer is improved by injecting a hot air jet, i.e., how convective heat transfer is achieved on an interlayer covered up by mouldings 12, 13.

Claim Rejections—35 USC §103

5. Claims 17, 18, and 27-31 are rejected under 35 USC 103(a) as being unpatentable over Kavanagh et al. (WO 91/19586) in view of Balduin et al. (US 2001/0007270), and further in view of Mattimoe et al. (US 3,900,673).

Regarding Claim 17, Kavanagh et al. teach a process for forming a curved laminated glass pane comprising first and second glass sheets, together with an interlayer having at least one bioriented thermoplastic carrier layer (i.e., a functional layer) which is preferably polyethylene terephthalate and at least one layer of polyvinyl butyral bonding resin (Abstract; p. 1, L. 14-23; p. 4, L. 9-12; p. 6, L. 27-32; p. 7, L. 13-15). The process comprises: thermoforming the interlayer **70** on a mold **26** having the end shape of the laminated glass pane (Fig. 3; p. 10, L. 35-37; p. 11, L. 5-11; 24-32); and positioning the interlayer between two curved glass sheets and laminating the assembly under heat and pressure (p. 12, L. 8-23).

Kavanagh et al. teach first preheating the interlayer **70** to a predetermined shaping temperature, which then enables the interlayer to be drawn and stretched (i.e., pretensioned) against the mold **26** (by creating a vacuum between the interlayer and mold) before thermoforming, i.e. before further raising the temperature to relieve the stresses in the pretensioned interlayer and heat set the interlayer in this shape (Fig. 3; p. 10, L. 16-27, L. 35-37; p. 11, L. 1, L. 5-16). Kavanaugh et al. thus teach preheating the interlayer so as to effect a pretensioning of its functional layer before thermoforming. Kavanagh et al. further teach cooling the interlayer after thermoforming and before subsequent lamination (p. 11, L. 16-18). However, Kavanagh et al. teach only radiant

heating and cooling within stagnant chamber **32** (Fig. 3; p. 14, L. 3-9, L. 29-37; p. 15, L. 1, L. 9-13) and do not teach the use of a hot-air jet to effect said preheating, nor cooling by forced draft.

Balduin et al. teach a process of producing laminates comprising two sheets of glass together with a plastic adhesive interlayer [0001]-[0002]. Before lamination, pre-forms **1** of said glass sheets and interlayer are preheated in a heating chamber **7**, using either radiant or convective means (Fig. 1; [0032]). Balduin et al. further teach that, in a similarly heated subsequent pressing chamber **9**, a hot-air blower is a suitable heating means [0033]. (While Balduin et al. do not teach such a heating method applied to the interlayer before thermoforming, one skilled in the art would have recognized the disclosed hot-air blower as an effective means of heating the interlayer at any stage.) Balduin et al. thus teach that a radiant heater and a hot-air blower are considered functionally equivalent means of heating the interlayer of a safety glass laminate, such that it would have been obvious to one of ordinary skill in the art to substitute a hot-air jet for the radiant heater disclosed by Kavanagh et al. The skilled artisan would have recognized that such a hot air jet could be injected from the bottom of the apparatus of Kavanaugh et al. and then withdrawn, since Kavanaugh et al. teach first preheating the interlayer to shaping temperature before creating negative pressure between the interlayer and mold (p. 10, L. 16-26).

Furthermore, Mattimoe et al. likewise teach a method of producing a laminated glass pane comprising two glass sheets **12**, **13** together with an interlayer **14** of polyvinyl butyral resin (Fig. 3; col. 4, L. 24-46). Said laminate also includes a protective

covering **15** comprising a layer of polyethylene terephthalate (PET) and a layer of polyvinyl butyral (col. 4, L. 47-49, L. 55-57; col. 5, L. 36-42). Mattimoe et al. teach first preheating the PET film to a stretching temperature, stretching the film, heat setting the film (i.e., relieving stresses in the distorted film by maintaining it at elevated temperature), and finally cooling the film in a cooling section using forced draught with air velocity of 1,000 ft./min. (col. 8, L. 35-65). Thus Mattimoe et al. teach that in the same fundamental process of Kavanaugh et al.—preheating, stretching (i.e., pretensioning), heat setting, then cooling a polyethylene terephthalate film—forced draught is an effective means of cooling the PET film, so that it would have been obvious to one having ordinary skill in the art to use forced draft during the post-thermoforming cooling of the interlayer in Kavanagh et al. Kavanaugh et al. teach that the interlayer is frozen in the shape of the mold after cooling (p. 11, L. 16-32), a result that would occur regardless of the particular cooling means used.

Regarding Claim 18, Kavanagh et al. teach an interlayer comprising two bonding resin layers **14, 16**, intended to contact distinct glass sheets, each adhered to opposite sides of a functional layer comprising carrier layer **12** and performance-enhancing layer **18** (Fig. 1; p. 2, L. 6-9; p. 5, L. 20-36; p. 6, L. 11-13).

Regarding Claim 27, Kavanagh et al. teach polyvinyl butyral as the bonding resin (p. 5, L. 32-36).

Regarding Claims 28 and 29, Kavanagh et al. teach forming a glass pane of a spherical shape generally in the form of a watchglass, having a cross curvature of 4.1 cm [41 mm] and a radius of curvature of 33.0 cm [330 mm] (p. 14, L. 9-20).

Regarding Claim 30, Kavanagh et al. teach a functional layer comprising a polyethylene terephthalate film adhered to one or more performance-enhancing layers, e.g. a solar reflecting mirror (p. 1, L. 28-34; p. 2, L. 6-16).

Regarding Claim 31, Kavanagh et al. teach thermoforming at a temperature of 130°C (p. 14, L. 26-36; p. 15, L. 1-7).

6. Claims 19, 22-25, and 36 are rejected under 35 USC 103(a) as being unpatentable over Kavanagh et al., Balduin et al., and Mattimoe et al. as applied to Claims 17, 18, and 27-31 above, and further in view of Frost et al. (US 6,352,754).

Regarding Claim 19, Kavanagh et al. describe a process of making laminates comprising an interlayer between two glass sheets, as described in paragraph 2 above. Kavanagh et al. teach such an interlayer comprising one functional layer and one bonding resin layer, the functional layer containing a solar reflective coating (Abstract; p. 1, L. 28-34). However, Kavanagh et al. do not teach said interlayer having a pre-cut peripheral portion to be later removed. Frost et al. likewise teach a method of making laminates comprising a interlayer between glass sheets, where the interlayer contains a coating for reflecting infrared solar radiation (col. 1, L. 7-28). Said reflective layers tend to corrode when they are disposed extending completely to the edge of the glass plates, eventually causing visual defects in the laminates (col. 1, L. 29-40). Frost et al. therefore teach first making an interlayer of the same dimensions as the glass plates, then cutting the functional layer **5**, **7** thereof via slicing blade **13**, leaving a pre-cut peripheral zone **8** to be removed in a subsequent step (Fig. 2, 3; col. 10, L. 56-65; col.

11, L. 6-12). Frost et al. teach that the resulting margining of the reflective coating protects it from corrosion (col. 3, L. 18-26). Thus it would have been obvious to one having ordinary skill in the art to apply the pre-cutting and subsequent peripheral removal steps onto the process of Kavanagh et al., Balduin et. al., and Mattimoe et al., because Frost et al. teach that these steps are an effective means of preventing corrosion in the interlayer.

Regarding Claims 22, 24, 25, and 36, Kavanagh et al. do not teach a process wherein the shaped interlayer is first positioned over one glass sheet, a pre-cut portion is peeled from the interlayer, and a second glass sheet is then applied to the interlayer. Frost et al. teach that, in a particularly preferred embodiment of their process, the interlayer is first formed with only one layer of PVB bonding resin that will permit assembly thereof with one glass substrate (col. 2, L. 5-9, L. 39-40, L. 49-62). This interlayer **3** is first positioned over one glass sheet **2**, with the PVB resin layer **4** applied to the glass **2** (Fig. 1; col. 10, L. 26-34; col. 12, L. 40-43). The pre-cut peripheral zone is then peeled off (leaving a certain distance between the functional layer's outer edge and the edge of the glass), a second PVB layer is added to the exposed surface of the functional layer, and the second glass sheet is positioned over and applied thereto (col. 3, L. 6-12; col. 4, L. 40-45; col. 12, L. 14-17, L. 55-57). Kavanagh et al. teach that the shape of the laminate's first and second glass sheets should match (p. 12, L. 8-11). Frost et al. teach that this sequence of lamination offers the advantage of allowing less precise positioning of the interlayer with respect to the glass sheets, as an oversized interlayer may be first adhered to the one glass, then incised at a precise distance from

the glass edge walls before peeling (col. 3, L. 43-51, L. 55-65). Thus it would have been obvious to one having ordinary skill in the art to apply the laminating and peeling sequence of Frost et al. onto the process of Kavanagh et al., Balduin et al., and Mattimoe et al., because Frost et al. teach that this sequence can produce an interlayer precisely margined with respect to the glass edge walls, without the need for very precise positioning.

Regarding Claim 23, Frost et al. do not specifically teach that the first-applied glass sheet is intended to be at the internal side of the final glass pane. However, one skilled in the art would have recognized that the order of assembly of the two glass panes (i.e. whether the intended internal side of the final glass pane is the first or second glass sheet applied to the interlayer) is unimportant according to the process taught by Frost et al., because the final glass-interlayer-glass laminate will be identical according to either order of assembly. It is also the position of the examiner that the intended use of said one glass glazing in Claim 23 does not add structure to the claim. Intended used of a known compound does not give it patentable weight. See *In re Thuau*, 57 USPQ 324, CCPA 979 135 F2d 344, 1943.

7. Claim 26 is rejected as being unpatentable over Kavanagh et al., Balduin et al., and Mattimoe et al. as applied to Claims 17, 18, and 27-31 above, and further in view of Hoagland et al. (US 5,264,058). Claims 20, 21, 33, 34, and 35 are rejected as being unpatentable over Kavanagh et al., Balduin et al., Mattimoe et al., and Frost et al. as applied to Claims 19, 22-25, and 36 above, and further in view of Hoagland et al.

Regarding Claims 20 and 26, Kavanagh et al. describe a process of making laminates comprising an interlayer between two glass sheets, as described in paragraph 2 above. However, Kavanagh et al. do not teach cold-stamping said interlayer in a configuration substantially corresponding to the end shape of the curved laminate to be made, where, as defined by Applicant, cold-stamping means pre-forming the interlayer at room temperature (see paragraph [052] of Applicant's Specification). Hoagland et al. teach a process of forming a shaped prelaminate of glass and plastic by thermoforming a plastic interlayer upon a mold, then bonding the interlayer to a contoured glass layer (col. 1, L. 54-62). Hoagland et al. teach initially clamping the plastic layers **62** of the laminate between upper and lower members **22**, **24** of an unheated peripheral clamp frame, giving the plastic layers a configuration approaching that of the glass, before applying the plastic layers to the hot mold for thermoforming (Fig. 1, 6; col. 3, L. 31-39; col. 4, L. 39-48, L. 60-62). Hoagland et al. teach that this initial cold-stamping helps avoid excessive stretch and wrinkling in the plastic layers in subsequent shaping (col. 3, L. 44-52). Thus it would have been obvious to one having ordinary skill in the art to cold-stamp the interlayer of Kavanagh et al. before thermoforming, because Hoagland et al. teach that this cold-stamping prevents defects in the interlayer in later steps.

Regarding Claims 21 and 33, Kavanagh et al. teach applying vacuum to the interlayer, specifically within the chamber **34** between the interlayer **70** and mold surface **27**, to make the interlayer adhere to the mold throughout the thermoforming step (Fig. 3; p. 10, L. 19-27; p. 11, L. 16-21). Kavanagh et al. further teach an interlayer

having a functional layer **12**, **18** and a single outer layer **14** of polyvinyl butyral bonding resin (Fig. 1; p. 1, L. 14-17; p. 2, L. 21-28; p. 5, L. 23-36). Kavanagh et al. do not explicitly state that this interlayer would have its functional layer adhered to the mold surface during thermoforming. Instead, Kavanagh et al. detail vacuum thermoforming for an interlayer with bonding resin on both faces, and teach that this embodiment may require an anti-stick agent to minimize unwanted sticking of the interlayer to the mold surface (p. 8, L. 8-13, L. 33-37; p. 9, L. 1; p. 10, L. 22-25). It would thus have been obvious to one having ordinary skill in the art to dispose the single-PVB-sided interlayer such that the functional layer, rather than the bonding resin, faces the mold surface, because Kavanagh et al. teach that applying the bonding resin to the mold surface can cause unwanted sticking of the interlayer to the mold.

Regarding Claims 34 and 35, Frost et al. teach positioning the shaped interlayer over one glass sheet, with the bonding resin layer applied to the glass surface, as described in paragraph 3 above.

8. Claim 32 is rejected as being unpatentable over Kavanagh et al., Balduin et al., and Mattimoe et al. as applied to Claims 17, 18, and 27-31 above, and further in view of Charbonnet (US 5,209,881).

Kavanagh et al. teach the use of a thermocouple **50** to monitor the temperature of the interlayer **70** during thermoforming and regulate the heating by feedback control (Fig. 3; p. 8, L. 22-32). However, Kavanagh et al. do not teach an infrared pyrometer as a means of detecting the interlayer's temperature. Charbonnet describes using infrared

pyrometers to measure the temperature of resin-containing laminates during curing of said resin, but teaches that thermocouples may also be used for this purpose (col. 2, L. 30-31, L. 48-53; col. 3, L. 19-21; col. 3, L. 51-53). Charbonnet thus teaches that infrared pyrometers and thermocouples are considered functionally equivalent methods of measuring the temperature of a resin laminate during heating. Therefore, it would have been obvious to one of ordinary skill in the art to substitute an infrared pyrometer for the thermocouple disclosed by Kavanagh et al.

Response to Arguments

9. Applicant's arguments filed July 23, 2008, have been fully considered but they are not persuasive. Applicant argues that an ordinarily skilled artisan would not have been motivated by Balduin et al. to substitute a hot-air jet for the heater 48 of Kavanaugh et al. To review, Kavanaugh et al. teach a process for making a curved laminated glass pane comprising first and second glass sheets, together with an interlayer comprising a bioriented polyethylene terephthalate (PET) functional film and at least one layer of PVB bonding resin. The process comprises thermoforming the interlayer by preheating it to a shaping temperature with a radiant heater, drawing and stretching (i.e., pretensioning) the interlayer onto a mold, heat setting the interlayer to the shape of the mold, and cooling the interlayer; then hot-pressing the interlayer between the two glass sheets to form a curved laminated glazing. While Balduin et al. are concerned with heating an interlayer after its lamination between glazings, Balduin et al. nonetheless teach that both hot air jets and radiative heating are effective heating

means in the process of making the same glass laminate structure of Kavanaugh et al. One of ordinary skill in the art would have found it an obvious and straightforward modification to simply substitute one heating means known in the art for another in the preheating step of Kavanaugh et al.

Further, while Kavanaugh et al. teach merely radiative cooling of the interlayer after thermoforming, Mattimoe et al. also teach a process of preheating, stretching (i.e., pretensioning), heat setting, then cooling a polyethylene terephthalate film before laminating it between glass sheets, and that forced draught is an effective cooling means therein. Thus one of ordinary skill in the art would have found it obvious (and faster) to cool the preheated, pretensioned, and heat set interlayer of Kavanaugh et al. by forced draft rather than waiting for it to cool radiatively, forced draft being known in the art as a cooling means for PET films after this treatment. As for Applicant's argument that neither Mattimoe et al. nor Kavanaugh et al. suggest forced draught cooling so as to freeze the shape of the interlayer of Kavanaugh et al., Kavanaugh et al. specifically teach that their interlayer is left with the curvature of the mold after its cooling and removal from the mold (p. 11, L. 16-32), an effect that would be independent of the particular cooling means used.

Applicant also argues that because Kavanaugh et al. teach ultimately heating their interlayer so as to relieve stress therein, Kavanaugh et al. are at odds with the claimed pretensioning of the interlayer's functional layer. However, Kavanaugh et al. also specifically teach first preheating the functional layer to a shaping temperature so that it can be drawn and stretched, i.e., pretensioned, upon the mold (p. 10, L. 16-25).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to BRIAN R. SLAWSKI whose telephone number is (571)270-3855. The examiner can normally be reached on Monday to Thursday, 7:30 a.m. to 5:00 p.m. ET.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino, can be reached on (571) 272-1226. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Brian R. Slawski/
Examiner, Art Unit 1791

/Jeff H. Aftergut/
Primary Examiner, Art Unit 1791

B.R.S.